

NARRATIVE REPORT

STILLWATER WILDLIFE MANAGEMENT AREA

JANUARY - APRIL
1950

PERSONNEL

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INDEX

	Page
WEATHER CONDITIONS	1
WATER CONDITIONS	1
FIRES	3
MIGRATORY BIRDS	3
UPLAND GAME BIRDS	7
BIG GAME ANIMALS	8
FUR ANIMALS, PREDATORS, RODENTS & OTHER MAMMALS	8
PREDACEOUS BIRDS	10
FISH	10
PHYSICAL DEVELOPMENT	11
PLANTINGS	13
COLLECTIONS	14
RECEIPTS OF SEED AND NURSERY STOCK	14
GRAZING	15
RESEARCH PROGRESS REPORT	16
RECREATIONAL USES	20
REFUGE VISITORS	20
REFUGE PARTICIPATION	22
FISHING	23
VIOLATIONS	24
OTHER ITEMS	24
SIGNATURE	25

I GENERAL

A. Weather Conditions

Judging from the accompanying weather data, we have had a pleasant winter. It hasn't been too cold - or too hot, and we haven't been hampered with mud or snow. Maybe we shouldn't complain, but -

The rainfall this period has been just one-third of normal. As a result the desert plants continue to appear as brown and lifeless as they did in midwinter, whereas they should be producing new green growth. Needless to say this has added a complicating tribulation to the many involved in selling the ranchers a brand new grazing program. The gusty spring winds haven't cooled any feversih brows, either. They have blown persistently while we struggle through the crucial stages of preparing 430 acres of new pasture land for irrigation. Work on the pasture hasn't been any picnic for the crew despite all the sand in their lunch.

	<u>Snow</u> <u>Fall</u>	<u>Precip.</u>	<u>Miles of</u> <u>Wind</u>	<u>Max.</u> <u>Temp.</u>	<u>Min.</u> <u>Temp.</u>	<u>Mean</u>	<u>Evap.</u>
Jan.	3.2	.10	3416.2	71	- 4	31.4	2.900
Feb.	T	.18	1457.5	72	- 2	38.0	1.574
March	3.5	.38	3604.7	76	7	41.8	3.652
April	<u>T</u>	<u>.10</u>	<u>3261.6</u>	<u>85</u>	<u>19</u>	<u>50.2</u>	<u>5.768</u>
TOTALS	6.7	.76	11740.0	85	-4	40.3	13.894

B. Water Conditions

In spite of drought conditions prevailing during the previous period and a below normal rainfall for the valley, the water outlook at the present time is very satisfactory. This is due to havey snow-falls on the Carson and Truckee River water sheds, the two sources of our ultimate water supply.

As will be noted in the table below, the usable water storage in the reservoirs that provide storage facilities for the Truckee-Carson Irrigation District, in which the Stillwater Wildlife Management Area is located, show an ample supply.

RESERVOIR STORAGE
As of April 30, 1950
(All figures acre feet)

Reservoir	Capacity	Usable Storage	Ten Year Average
Lahontan	290,400	220,877	244,166
Boca	40,000	16,132	14,842
Lake Tahoe	720,000	295,000	378,000

Snow survey data compiled by the Soil Conservation Service indicates the following for this coming year as compared to last year's runoff. These data have been proven to be highly accurate in past years.

	1949 Last Year	1950 This Coming Year
Carson River into Lahontan Reservoir	128,000 a.f.	200,000 a.f.
Truckee River past Derby Dam	125,000 a.f.	150,000 a.f.

Lahontan Reservoir is the storage reservoir for the Newlands Project.

Derby Dam is the point of diversion for water from the Truckee River into Lahontan Reservoir. The quantity of water that can be used in the Newlands Project is dependent on the speed of the runoff in the Truckee watershed, as the diversion canal has a capacity of approximately 800 cfs.

Lake Tahoe in the Truckee watershed acting as a reservoir, has a maximum and minimum storage level of 6229.10 and 6223.00 respectively. Snow surveys indicate that this will reach a level of 6226.65 this year as compared to 6225.45. This storage is drawn on, usually starting on July 1st and in effect extends the period of usable storage for the Newlands Project in the Truckee.

Donner Lake and Boca Reservoir both of which provide late fall and winter flow into Lahontan Reservoir via the Truckee River, both will fill and spill this year.

In summary, this will be a heavy runoff year into the Stillwater Wildlife Management Area with inflow into Stillwater Point Reservoir probably exceeding 52,000 acre feet. Lahontan Reservoir is expected to fill and spill and have a higher than average level at the end of the year.

Water in the marsh leveled after last fall's inflow and winter losses lowered the marsh level approximately 18".

Stillwater Point Reservoir, with a capacity of 7,000 acre feet at 3909, was at elevation 3908.4 on April 30th. It will be noted that this Reservoir with a capacity of 7,000 acre feet and an estimated inflow this year of approximately 50,000 acre feet, can do little more than act as a surge tank to level off inflow into the marsh. Monthly distribution of this inflow is approximately as follows:

February --	3%	August ----	13%
March -----	4	September -	12
April -----	6	October ---	8
May -----	11	November --	7
June -----	13	December --	5
July -----	14	January ---	4

C. Fires

On March 1st a burning program was set up for the Area for a three-fold purpose. First, to clear away vegetative mats so channels could be opened for fishermen and hunters; second, to remove heavy cattail growth to facilitate erection of marsh structures and dikes and third, to reduce fire hazard.

This program was carried out from March 28 to 31st, with most of the burn being on the west side of the marsh on area that is open for public hunting. The area burned included about 1,000 acres of cattail, 50 acres of hardstem bulrush and 250 acres of salt grass. Most of the burn was clean and served the purpose for which it was intended.

II WILDLIFE

A. Migratory Birds

1. Population and Behavior

The Stillwater marsh was frozen to a depth of 3 to 4 inches throughout the month of January. This had little effect on our population of Canadian geese and swans. These birds concentrated their activities in the Reservoir and the Big Water and maintained open pools of water. Snow geese, on the other hand, moved on south. The ducks also departed, some to the river or open ditches in the valley, but the majority going south. During this period, there were only about 1,000 ducks on the Refuge and Management Area, of which at least half were the less sensitive mallards.

After the ice thawed, the first of February, ducks began to reappear in increasing numbers; local ducks at first, then migrants until a peak of 25,000 was reached the first of March. By mid-April most of the migrants had come and gone, except for a few stragglers, the remaining waterfowl could be classed as resident. The present population consists of approximately 9,000 birds of which some 60 are Canada geese.

Swan. Approximately 2,000 swans wintered in the marsh, most of them concentrated on the Big Water adjacent to the Nutgrass area. They started leaving the latter part of February with the last being seen on March 28th.

Canada Geese. These geese were here throughout the winter. During the freeze-up, most of them fed in adjacent grain and alfalfa fields, 1,000 or more being seen on a number of occasions in a field on the Kent farm. At night the geese flew to the Reservoir. By mid-February the honkers started leaving and their numbers soon dwindled to the 60 or so birds now known to be present. On April 24th, the first brood of 4 (Class I) young was seen in the marsh north of Foxtail.

Cackling Geese and White Fronted Geese. Our records to date indicate that these geese seldom occur in appreciable numbers in the Stillwater Area.

Snow Geese. The cold weather was a little too much for these birds. They stayed for a short time after the marsh froze in December, then, without a dissenting vote, moved on south. They were not seen again until February 13th, when 4 were observed in a flight of honkers. A month later 3,000 were present and by the end of March the last one had gone north.

Mallards. The mallard migration lasted about one month, starting in mid-February. At present the population numbers about 600.

Gadwalls and Baldpates. The gadwalls and baldpates failed to reappear in anything like their fall numbers. The first migrants of each species were observed on February 17th. Baldpates had reached a peak of 1,000 birds by mid-March and were practically gone by the end of the month. Gadwalls did not reach a peak until early April and are still present in peak numbers.

Pintails. Pintails were our most common spring migrant, though virtually none remained during the cold part of the winter. Their peak was reached in late February, and all but a very few had left by mid-April. About 50 are now estimated to be present.

Green-winged Teal. The green-winged teal started returning with most of the other ducks in mid-February. On March 10th we counted 3,000. At the end of the report period, about half this number were still present.

Cinnamon Teal. No cinnamon teal stayed through the winter. The first arrivals were noted on February 8th, and peak numbers were reached the first half of March when 400 were estimated to be present. It is expected that most, or all, of these birds will nest on the marsh.

Shoveller. The shoveller migration did not get under way until the first of March. Since then these ducks have continued to increase slowly in numbers. There are now about 900 present.

Redhead. The pattern of redhead migration has been parallel to that of the shoveller. The population numbered 400 at the time of the last, April 25th, aerial census. Apparently it is still increasing.

Canvasback. Canvasback ducks were here from mid-February on. The peak of 250 was reached in late February, only about 15 remain.

Ruddy Ducks. Ruddy ducks appeared in late March. Their numbers quickly built up to a peak of 3,000 which is 6 times as many as were found here last fall. Practically all of the ruddies concentrated in the Big Water. About 1,000 are still with us.

Wassanser. This fisherman's villain made considerable use of our facilities, and, we hope some of our surplus young carp, in early spring. A heavy flight appeared in mid-February at which time we observed 1,500. This influx is noteworthy in view of the fact that there were never more than 100 known to be present at any time last fall.

Marsh Birds. Of particular interest was a heron nesting colony estimated to contain 774 nests which was spotted from the airplane on April 24th. With the location of the colony established from the air, a preliminary ground investigation of the colony was made on April 27th. This was followed by a more detailed survey on April 29th.

This is the first heron rookery found on the Area, and without the airplane it probably would not have been located. The location of the colony is in the north-central part of the Stillwater marsh just west of the west nutgrass area. The colony is isolated from the mainland, but adjoins an island. It is situated in a 17 acre stand of hardstem bulrush, Scirpus acutus, which is surrounded by a band of cattail, Typha angustifolia. All but one end of the stand is being utilized by the birds, and all but six night heron nests were placed in the ^{Scirpus} ~~Scirpus~~ growth, the balance being in ^{Typha} ~~Scirpus~~. Water depth will average 30 inches. Nests are most concentrated along a channel and openings within the vegetation.

For the survey of the colony on April 29th, Giles, Fred Wright, Nevada State Waterfowl Technician, and Marshall spent more than 4 hours wading through the entire rookery obtaining data on each nest found. A total of 563 nests were seen. The bulk of these were nests of black-crowned night herons, snowy egrets and blue herons. Only three American egret nests were found. This is not surprising in view of the fact that this bird is seldom seen on the Area. One white-faced glossy ibis nest found may be only the start of nesting for this bird, as ibis have just begun to return to the valley for

the summer. Inasmuch as some of the nests were particularly well hidden, and some corners of the rookery were not entered, it is certain that not every nest was found. The table below gives figures on the nests observed and the number of nests estimated to be present.

	<u>Nests Found</u>	<u>Av. Clutch</u>	<u>Total Nests Estimated Present</u>
Night Heron	423	3.591	600
Blue Heron	73	4.169	80
Snowy Egret	63	3.197	90
American Egret	3	4.7	3
White-faced G. Ibis	<u>1</u>	<u>4.</u>	<u>1</u>
TOTALS	563		774

Average clutch given for night heron nests is based on 149 nests which had all young or young and eggs. It thus is based on completed clutches, but does not take into account some young which had fallen from the nest. The average clutch given for the blue heron is based on 28 nests which contained young or young and eggs. Snowy egret nesting had not progressed to the hatching stage, and consequently clutch data had to be based on 61 nests which contained eggs only. No young American egrets or ibis had hatched.

The night heron nesting is furthest along. Young night herons in both flapper and flight stages are present in considerable numbers. Of the 423 night heron nests found, 78 were empty but believed to have been used this year. Night heron nests are constructed of Scirpus acutus.

At the time the colony was visited, no young blue herons were ready to leave the nests and hatching was less than half completed. Blue heron nests are constructed of Scirpus acutus, seepweed (Suaeda sp) and burro-weed (Allenrolfea occidentalis).

Snowy egret nests average somewhat smaller in diameter than the night heron nests, but otherwise are the same. There is a noticeable difference in size of the eggs of the two species and identification was made on this basis.

The white-faced glossy ibis nest is similar to the night heron, and an ibis seen on the nest was basis for identification. The American egret nests contain little or no desert vegetation, but otherwise appeared like blue heron nests.

Mortality seemed low. No evidence of predation was seen. Some mortality is occurring through drowning when young fall from the nests. One dead night heron in the flapper stage apparently was strangled by a 7 inch carp found protruding from his bill.

The only other fish seen around the nests were two 10 inch carp

found on one blue heron nest, one seven inch carp lying in a blue heron nest and one seven inch carp found on a night heron nest.

Twenty-nine young night herons were banded.

The rookery appears to be a new one. The blue heron nests are the only ones which might have been used during previous years.

This colony along with a blue heron rookery on the Freeman Ranch, which adjoins the Area, gives us a good basis for estimating heron populations.

2. Food and Cover.

Except in the Lead Lake, Willow Lake and Millan's Channel areas, an abundance of food was produced last year. This consisted principally of seeds from the following:

Sago Pondweed, Potamogeton pectinatus
Wigeongrass, Ruppia maritima
Alakli Bulrush, Scirpus paludosus
Hardstem Bulrush, Scirpus acutus

The seed supply produced by these plants was more than ample for the period over the areas in which these plants are present. The deep ponds surrounded by heavy growths of cattail at the south end of the Area in the vicinity of Lead Lake were practically barren of food and consequently little waterfowl use was made of them.

Cover distribution is poor over most of the Area. At the south end of the area large cattail growths are too thick and heavy for good waterfowl cover. Along the shallow ponds at the north end of the Area a more scattered emergent growth provides good cover, but along the Big Water no emergent vegetation is present. Shoreline vegetation throughout the Area has been heavily grazed and consequently does not offer nesting cover for surface-feeding ducks.

3. Botulism

No botulism occurred during this report period.

4. Lead Poisoning

No lead poisoning was observed during this report period.

B. Upland Game Birds

Until the irrigated pastures are completed, we will not have

suitable upland game bird habitat. Occasionally valley quail and ring-necked pheasants are seen in the Indian Lakes area. A few of these birds are also occasionally seen along the edges of the Management Area adjoining farmland and next to private land along the Carson River.

C. Big Game Animals

None

D. Fur Animals, Predators, Rodents and Other Mammals.

1. Muskrat

When the development of the Stillwater marsh was begun in the spring of 1949, the muskrat population was at a very low ebb. Disease had so reduced the numbers of these furbearers that evidence of their presence was practically non-existent. Because of this condition an effort was made at restocking and 440 were transplanted from Tule Lake Refuge.

In the fall of 1949, the muskrat inventory revealed a population of about 1,500. This represented only what could be expected as the increase from those transplanted and was not enough to either benefit the marsh or offer trapping possibilities. Therefore, plans were made for additional restocking.

This second transplanting project was started on March 1. Live-trapping was conducted on the Sheepy Lake unit of Lower Klamath Refuge with one trapper operating 48 National (box type) traps. Muskrats were abundant and little difficulty was experienced in catching them. The quota of 350 was reached by March 20th in spite of a freeze-up which greatly reduced the catch during a period of 4 days.

Lately we have noticed a considerable amount of muskrat activity in the marsh and prospects seem good for a considerable increase in population.

One of the greatest benefits which we can hope to derive from a muskrat population is a reduction in the marsh vegetation. In our deepest marsh, particularly, the stands of cattail (*Typha domingensis*) are so dense that the marsh is worthless for waterfowl. This species of cattail grows to a height of 10 to 15 feet above the water surface, and after the dead plants have fallen over in the fall of the year a heavy mat is produced which will support the weight of a man. You can't walk this type of marsh, but you can crawl over it. Muskrats occur in this type of marsh and build houses in it, but the present population is so thin that their cuttings in the cattail are completely obscured.

On two occasions last fall we attempted an aerial census of our

muskrat houses. Each time we arrived at the same figure for the area of heaviest cattail growth - 7 houses. Then, during the period from March 28 to 31 we set fire to this particular area. Following the burn a count covering less than half the area in which the 7 houses were seen revealed the presence of 75 houses. This seems like a good illustration of heavy marsh growth.

2. Raccoon.

These animals occasionally come down the Carson River, and once in a while one appears along the irrigation ditches and drains. Only a stray individual, it would seem, ever gets as far as the Stillwater marsh. On January 20th the tracks of one raccoon were observed along the east side of Stillwater Point Reservoir. This constitutes a new record for the Area.

3. Mink.

These animals probably appear also as strays in the marsh. We have no record of any being caught there, but several trappers have reported finding their tracks. Our only concrete evidence of mink presence is based on a skull found on February 7th south of the Navy Cabin site. The skull appeared on the top of a knoll among Indian detritus uncovered by wind action. Actually, the skull was hundreds of years old, so it was not possible to determine whether or not mink formerly occurred in the marsh. This particular animal may have been killed elsewhere by a travelling Indian and brought back as a curiosity.

4. Other Furbearers.

Other furbearers seem to be about as rare as mink and raccoon and consequently are significant only as report material.

5. Predators.

The only predator with which we need be concerned is the coyote, and coyote control has been so effective that the danger from predation is more potential than actual. Two years ago it was not unusual to see from 5 to 10 coyotes in a day. Last year, following a very successful season of control with 1080 bait, there were only 3 or 4 actual sight records of animals in the vicinity of the Stillwater marsh. Tracks were still common but the absence of continuously used trails indicated a sparse population. This winter the remaining animals were virtually eliminated. Twenty bait stations were in operation on the Management Area to such good effect that we have noted only two fresh coyote tracks this spring. The predator control agent, Vince Bogatich, has pointed out that the coyote population trend is in part reflected by the number of pounds of bait consumed. Two years ago coyotes consumed about 3/4 of the bait at his stations. This

winter only about 1/3 was eaten. Some of the bait was hardly touched which would indicate that there were not enough coyotes to go around.

6. Rodents

This is a subject which offers plenty of opportunity for discussion and argument. However, we are not, at present, prepared to set forth on any lengthy dissertation. Except for certain blank spots, such as the barren alkali flats, we have plenty of rodents. In the previous narrative report the irruption of meadow mice along the salt grass marsh borders was mentioned. There are, also, numerous small rodents in the greasewood-shadscale association characteristic of the sand hills that comprise a major portion of our desert land. E. Raymond Hall, who has worked extensively on the mammals of Nevada, states that a very conservative estimate of the number of rodents in this type of habitat is 20 per acre.

It would certainly seem that the rodents of the desert land are detrimental from the standpoint of forage production, and the marsh population must be considered equally undesirable. Nevertheless, there is a question as to what, if anything, can be done about it. Any attempt at rodent control on an area involving more than 100,000 acres of desert and marsh land cannot be economically justified.

E. Predaceous Birds

At least 15 bald eagles were present at one time. Other than marsh hawks, an occasional Swainson's hawk was the only hawk seen.

Not more than 25 magpies were believed present. These were concentrated in the Indian Lakes and Carson River areas away from the main marsh. Ravens were not observed during this period, but a few crows worked the edges of the main marsh next to adjoining farm land. Since the area is new we are unable to make comparisons with previous years.

F. Fish

Conditions for fish in the marsh through this period were better than through an average year.

Heavy inflow into the marsh had ended in December and marsh water levels flattened out. Water in Lead Lake, Millan's Channel and Willow Lake in the western part of the marsh where the catfish and bullhead population is went down, and levels in the nutgrass and big water areas came up. Stillwater Point Reservoir levels increased most of the period. Ice covered the shallow water areas intermittently throughout the period. No winter loss of fish was noted.

III DEVELOPMENT AND MAINTENANCE

A. Physical Development

Development through this period progressed rapidly until March 31st, when completion of most of the work program and shortage of funds necessitated a cut in personnel. At this time the crew was cut from about 30 to 8.

Working conditions were only fair through most of the period. Average winter cold caused a little trouble in starting diesel equipment and more than normal wind caused considerable sand drift and disagreeable working conditions in the pasture area. Precipitation, only 3/4 inches for the 4 months was not a limitation on the work program.

1. Paiute Canal

Water started flowing through this canal about April 1st. Wind drifted weeds were cleaned from it in mid-April to facilitate the flow through it. The culvert on the upper end was riprapped.

2. West Canal

Excavation on the West Canal was completed. The canal headgate and structure WC-2 (Canvasback Gum Club canal outlet) were completed and the footing poured for structure No. WC-5, (See Development Plan) Flashboards were cut and installed. Riprapping remains to be done at structures. Canal excavation full length has been dressed down and filled where necessary; widening and deepening of a small part of the West Canal was completed. A 72" culvert was temporarily installed on the gravel pit road crossing.

3. East Canal

Structure No. EC-3 was poured and backfill on EC-2 was puddled in. Some riprap was placed on the Canal headgate. All lateral turnouts on East Canal were installed. Backfill is partially completed.

Canal excavation, full length, has been knocked down and fill made with the carryall where necessary. A 72" culvert was temporarily installed on the gravel pit road crossing.

4. Hunter Drain

The Canvasback Gum Club Canal - Hunter Drain 4-Way structure was completed, backfilling done, and flashboards installed. This job, located where the water table was high, was difficult because of continual water inflow.

5. Hunter Road

Additional fill was made from about station 12 to 72.

6. East Pasture Development

Clearing was completed. All contours were completed to lateral 351, approximately 5 1/2 miles in all.

Both checks were poured in lateral 294 and forms set for check 16 plus 30 in lateral 336.

Lateral 294 was completed except for riprap and turnouts.

Lateral 314 was roughed out and lateral 336 was completed on the West (Road) side.

Every effort is being made to complete laterals 294 and 336 so water can be put on the area between lateral 336 and 351 to stop soil blowing.

7. Sand and Gravel Pits

When the aggregate in our gravel pit began to run heavily to sand, a new coarse aggregate pit was opened and a screen installed to eliminate sand. Tests run by the Nevada State Highway Department laboratory is our basis of mixing sandy and coarse aggregates used in concrete.

8. Equipment

All old Chevrolet trucks have been overhauled and repairs as necessary, including preventative maintenance performed on all other equipment. An equipment washing set up was completed and all equipment cleaned.

Allis Chalmers HD-14, S/N 995, required a new starter armature new dozer hydraulic pump parts, new rampacking, new final drive packing, tracks adjusted and minor new clutch parts including a new throw out bearing.

Allis Chalmers HD-14, S/N 1042, required a new transmission drive shaft, new transmission bearings and final drive packing. The cable control unit was installed on this unit for adaptation of the carryall scraper.

The R-5 Caterpillar arrived from the Bison Range and was given a thorough going over before being put in service. Spokes in front idler wheels were welded, a new starter armature and end plates installed, tightened all con rods and other minor repairs.

The elevating grader belt, both upper and lower drive rollers and the upper drive roller shaft were repaired.

9. Headquarters

The oil house was completed and at present is being used for seed storage, being the only mouse proof building we have.

The diesel tank was moved from the temporary headquarters plot to the service building.

Posts were received for the headquarters plot fence just at the end of the report period.

B. Plantings

1. Aquatic and Marsh Plants

During this period a start was made on our marsh planting program. The work may be considered only the initial phase of what will eventually be an extensive project. At the present time we are handicapped by the lack of marsh water control and the lack of fencing to restrict cattle grazing in the marsh so that extensive plantings are neither practical or possible.

Advantage was taken of the trips to Tule Lake Refuge during the muskrat transplanting project to secure another sack of plants and rhizomes of marsh smartweed, Polygonum mihlenbergii. These were planted along the Stillwater Point Reservoir. This is the second attempt to get this plant started on the Area. A transplanting was made in September, 1949, which apparently failed. The plants had just started to produce new sprouts when the first frost occurred.

We have been particularly interested in getting the three-square rush, Scirpus americanus, started on the Stillwater marsh. It is known to occur in two places but is confined to a very small area in each spot. Its absence may be accounted for by soil requirements. The plant occurs throughout the valley but is generally restricted to sandy soil, whereas our marsh is characterized by clay or peaty-muck soil. In spite of this limiting factor, some experimental work with the plant seemed worthwhile. A waterfowl food habits study conducted by the State Federal Aid Division last fall, in which this office cooperated, revealed that americanus is so palatable that ducks will take it in preference to more readily available seed. Most of the duck stomachs containing americanus were taken from ducks killed in, or near, our big nutgrass (Scirpus paludosus) area.

On February 23rd one jeep truck load of americanus rootstocks was transplanted from Rattlesnake Reservoir to Stillwater Point

Reservoir. Rattlesnake is the nearest place at which planting stock is available, but 4-wheel drive equipment was needed to get at it, therefore, during the rest of the project stock was secured from Mahala Slough along the edge of Highway 50 about 12 miles west of Fallon.

Starting on April 4, two men spent 8 days transplanting 5 dump truck loads of americanus. Approximately 1400 rootclumps were moved. These clumps were kept as large as practical, averaging about 8x10x12 inches, in order to reduce the extent of damage to viable rhizomes and to retain as large a matrix of original soil as possible. Plantings were made along Fortail Lake and Chamel, Stillwater Point Reservoir, and on bare flats in the east nutgrass area. Roughly 6,500 feet of shoreline were planted with the clumps being set in 2 rows and spaced an average of 9 feet apart.

In addition to the americanus about 325 clumps (1 1/4 dump truck loads) of Nevada bulrush, Scirpus nevadensis, were transplanted from Soda Lake, 8 miles west of Fallon, to Stillwater Point Reservoir, Fortail Lake, and the east nutgrass area. Our limited experience with this plant indicates that it also prefers sandy soil. Furthermore, it grows above high water line which would account for its failure to appear in duck food analyses. It does have comparatively large seeds, however, and if it can be induced to grow under conditions of fluctuating water level such as exist on the Stillwater marsh, it should be of value to waterfowl at least during high water periods.

Because of the soil limitations our planting work this spring must be considered experimental. Eventually, when we get the water control which will enable us to create new marsh areas, more extensive plantings will have to be made and nutgrass will be relied up more than any other plant. It is adapted to the area and is available in unlimited quantities. There are other plant possibilities also which will be well worth trying. Scirpus olneyi, for example, which grows more readily in clay or muck soils than americanus, has been reported from Railroad Valley and should be introduced.

C. Collections

1. Seed and Other Propagules

The collection of planting stock is discussed under section III-B, plantings of aquatic and marsh plants.

D. Receipts of Seed and Nursery Stock

During the period the following amounts of seed were purchased or received on transfer from other refuges. These seeds are on hand

awaiting the completion of the irrigation system on the East Pasture.

<u>Seed</u>	<u>Amount</u>	<u>Source</u>
Barley	20,800 lbs.	Tule Lake
Crested Wheat Grass	500	Medicine Lake
Yellow Sweet Clover	300	Mad Lake
Brome Grass	1,500	Slade Refuge
Birdsfoot Trefoil	100	Purchased
Strawberry Clover	100	Purchased
White Dutch Clover	200	Purchased
Alfalfa	400	Purchased
Orchard Grass	800	Purchased
Perennial Rye Grass	800	Purchased

IV ECONOMIC USE OF REFUGE

A. Grazing

A temporary grazing plan is being drawn up. Upon its approval the billing of livestock operators for the grazing that is taking place on the Area is expected to begin. During the period over 100 horses grazed the Pelican Island Area at the mouth of the Carson River. During April cattle were put into the Stillwater marsh, the Indian Lakes and mouth of the Carson River. A count of livestock made from the airplane on April 24th showed 344 head of cattle and 124 horses were using the Area. Most of this use was at the mouth of the River and about the Indian Lakes, desert grazing is not taking place this spring because the lack of rain has prevented normal spring plant growth.

With the fencing of the Area, it will be possible to regulate grazing, but until that time considerable livestock damage will continue in the form of destruction of shoreline nesting cover and waterfowl food.

A land ownership map was made showing private land on the Area. It presents a checker-board-like appearance of private land intermingled with public domain over a considerable part of the Area. Such a land pattern is expected to make grazing regulation difficult, especially when one considers the fact that much of the private land is unfenced.

Acres established in the preparation of the land status map are:

Area Within Exterior Boundary	205,280.00 acres	
Less Privately owned land	<u>51,213.78</u>	
Total Public Domain		154,066.22 acres

This Public Domain area was found to contain:

Open Hunting Area	130,106.22 acres
Refuge	<u>23,960.00</u>
Total Area Under Administration	154,066.22 acres

V FIELD INVESTIGATION AND RESEARCH

A. Progress Report

1. Waterfowl Banding

The refuge has cooperated with the State of Nevada in a waterfowl banding program to the extent of providing bait (22 sacks of barley secured at Tule Lake) and a limited number of bands. Most of the duck trapping was done on Rattlesnake Reservoir, 2 miles east of Fallon and 5 miles south of the south boundary of the Management Area. A small percentage of the ducks, however, were taken on a pond located in the northwest corner of the Stillwater marsh. The final banding report of the State Waterfowl Biologist, Fred Wright, is included here for the record.

It is interesting to note that Mr. Wright caught and banded a male mallard-pintail hybrid.

Post-Hunting Season Banding

Winter banding was conducted from January 1, 1950, through March 3, 1950, and resumed from March 16-27th, 1950.

Type of trap. Similar to the "Ohio Pheasant Trap" (described in "The Ring-necked Pheasant and its Management in North America" by W. L. McAtee), and constructed so that it can be readily taken down, moved and reassembled. The trap is built in water at depths from a few inches to two feet. A tunnel and catching pen are used in getting the birds out of the trap to where they can be easily handled for banding on dry ground.

Banding sites: Trap #1 was maintained in the channel of the Rattlesnake Reservoir outlet from January 1, 1950, to March 3, 1950. The reservoir is approximately three miles east of Fallon. Trap #2 was put in the same outlet from January 17th - February 2nd., then moved to Soda Lake, west of Fallon until February 11th. No birds were caught at Soda Lake. Trap #2 was then moved to Rattlesnake Reservoir until the last of February when it was closed.

One trap was built on the northwest pond of the Stillwater Wildlife Management Area March 16th and was closed March 27th.

Bait: Barley was provided by the Fish and Wildlife Service under a cooperative banding program on the Stillwater Wildlife Management Area.

Weather: The freezing weather that existed through January and the first part of February was favorable for banding. Several thaws during this period resulted in a drop in the daily catch. The running water in the outlet channel, and manually breaking the ice each day to keep the water open around the trap #1 made the pond attractive to ducks while the surrounding areas were frozen. The advent of warmer weather and more open water through the latter part of February was accompanied by a general decrease in daily catch.

BANDING SUMMARY

Jan. 1 - March 3, 1950

March 16-27, 1950

<u>Species</u>	<u>No. Aired & Sexed</u>	<u>Unclassified</u>	<u>Total</u>
Mallard	587	0	587
Pintail	158	0	158
Green-winged Teal	39	0	39
Cinnamon Teal	44	0	44
Redhead	16	0	16
Baldpate	7	0	7
Canvasback	5	0	5
Lesser Scaup	2	0	2
Ring-necked Duck	1	0	1
Mallard-Pintail Hybrid	1	0	1
Coot	0	100	100
TOTALS	860	100	960

Banding Data

Area and Date: Rattlesnake Reservoir (RR)
Stillwater W. M. Area (SWMA)

Jan. 1-Mar. 3
Mar. 16-27

<u>Species and Area</u>	<u>Male</u>		<u>Female</u>		<u>Total</u>
	<u>Adult</u>	<u>Immature</u>	<u>Adult</u>	<u>Immature</u>	
Mallard RR	279	81	201	26	587
Pintail RR	66	18	14	6	104
SWMA	22	0	32	0	54
Redhead RR	2	10	1	3	16
Baldpate RR	1	1	3	2	7
Canvasback RR	0	2	2	1	5
Cinnamon Teal SWMA	24	2	18	0	44
Green-winged Teal RR	1	3	0	0	4
SWMA	26	0	9	0	35
Lesser Scaup RR	0	2	0	0	2
Ring-necked Duck RR	0	0	1	0	1
Mallard-Pintail Hybrid RR	1	0	0	0	1
Coot RR					26
SWMA					74
Grand Total					960

Species Composition
by percent
(excluding coots)

<u>Species</u>	<u>Percent</u>
Mallard	68.3
Pintail	18.4
Cinnamon Teal	5.1
Green-winged Teal	4.5
Redhead	1.86
Baldpate	.81
Canvasback	.58
Lesser Scaup	T
Ring-necked Duck	T
Mallard-Pintail Hybrid	T

The sex ratio of mallards banded on Rattlesnake Reservoir was 1 female to 1.6 males, and the sex ratio of banded repeats was 1 female to 2.3 males. As pairing progressed through January and February more male mallards were still being trapped than females, indicating males were less trap wary than females. Winter trapping results in Montana showed similar trends. (Pacific Waterfowl Flyway Report #6). The last three days the trap was operated the male-female ratio was equal.

During January male pintails were more numerous in the trap with females increasing through February (sex ratio 1:4.2). When trapping was resumed in March female pintails outnumbered males, (sex ratio 1.45:1). On the basis of banding and observations it would indicate that male pintails pass through this area earlier than the females, and that paired pintails are not numerous during this period.

Observations showed mostly paired cinnamon teal upon arrival in this area (first seen February 8th). The sex ratio of sample trapped was 1 female to 1.44 males.

Records of each repeat was kept with the result that a maximum of 26 revisits were made by a male mallard and 19 by a female mallard. One male mallard returned after an elapsed time of 43 days. Of the mallard repeats recorded, 1.25 was the average number of returns to the trap, after being banded. Pintails showed less tendency to return to the trap.

Three foreign retraps (banded at other stations) were taken, two male mallards, and one male pintail. Information as to where they were banded has not been received. These retraps will be included in a complete analysis of all band returns through the 1949 hunting season when they are available.

Trap mortality: 7 mallards were killed by dogs in trap #2 on Rattlesnake Reservoir. This trap was then closed.

Coot bandings: Twenty-eight coots that were trapped and banded were released 1 mile from the trap site. Three days later six of these were retrapped and the following day seven more were retrapped. Fourteen coots that were trapped and banded were released 3 miles from the trap site. Two days later one was retrapped and the following day six more were retrapped. All of the coots were released in the marsh.

2. Waterfowl Food Habits

As a part of the preliminary biological reconnaissance of the Stillwater waterfowl area a study of duck food habits was initiated. This is primarily a PR project, and the duck stomach contents were largely collected during the open season last fall at the State operated checking station, however, FWS personnel have cooperated in the analyses. As far as possible the food materials were identified here. Our reference collection not being complete, though, we found it necessary to submit some seeds to the Food Habits Laboratory at the Patuxent Refuge. Animal food materials were determined at the University of Nevada, Reno.

A total of 87 stomachs were checked. Of this number 85 contained food items and are included in the following summary. The food habits are portrayed by means of a table and a graph, however, we feel that these should be supplemented by certain explanatory or qualifying statements.

The number one food, as indicated by the study, is Sage pondweed. This plant is abundant in most of the shallow ponds and provided both seeds and tubers. We are inclined to doubt, though, that it can actually be considered the most important food plant on the area. The number of canvasback ducks is much greater in our sample than their true proportion in the actual population, and this species together with redheads fed largely on Sage.

Common 3-square ranked second. It was taken the same number of times as wigeongrass but, because of the larger size of the seed, was present in greater volume. The use of this plant is particularly noteworthy. In spite of the fact that a majority of the ducks were killed in the Stillwater marsh, they had to do their feeding elsewhere to obtain any quantity of this seed. Only a few plants of 3-square occur on our marsh and the adjacent Canvasback Gun Club marsh has none.

Number 3 in preference was wigeongrass. This plant makes a dense growth in the Big Water and was used extensively by the gadwall and bladdpates which concentrated in that area.

Table 1. Frequency of appearance of waterfowl food items.

	Canvasback	Cadwall	Pintail	Mallard	Baldpate	Green-winged Teal	Redhead	Shoveller	Bufflehead	Cinnamon Teal	Total occurrence
<u>Sago pondweed, Potamogeton pectinatus</u>	17	7	5	5	4		2				40
<u>Common 3-square, scirpus americanus</u>	1	8	6	4	4	1		1		1	26
<u>Widgeon grass, Ruppia maritima</u>	3	8	4	1	8	1			1		26
<u>Rutegrass, Scirpus paludosus</u>	3	6	5	4	2	1					21
<u>Saltgrass, Distichlis sp.</u>		1	4	5				1			11
<u>Harlequin bulrush, Scirpus americanus</u>	1	2	1	3		1					8
<u>Common spikegrass, Eleocharis palustris</u>		1	1	3	1	1		1			8
<u>Rabbitfoot grass, Polypogon monspeliensis</u>			3	3							6
<u>Mallow, Sidalcea (?) sp.</u>	2		1	2		1		1			7
<u>Pennycress, Hernandia sp.</u>	1		1	2							4
<u>Miscellaneous seeds</u>			3	4		1	1				9
<u>Animal matter</u>			1	2							3

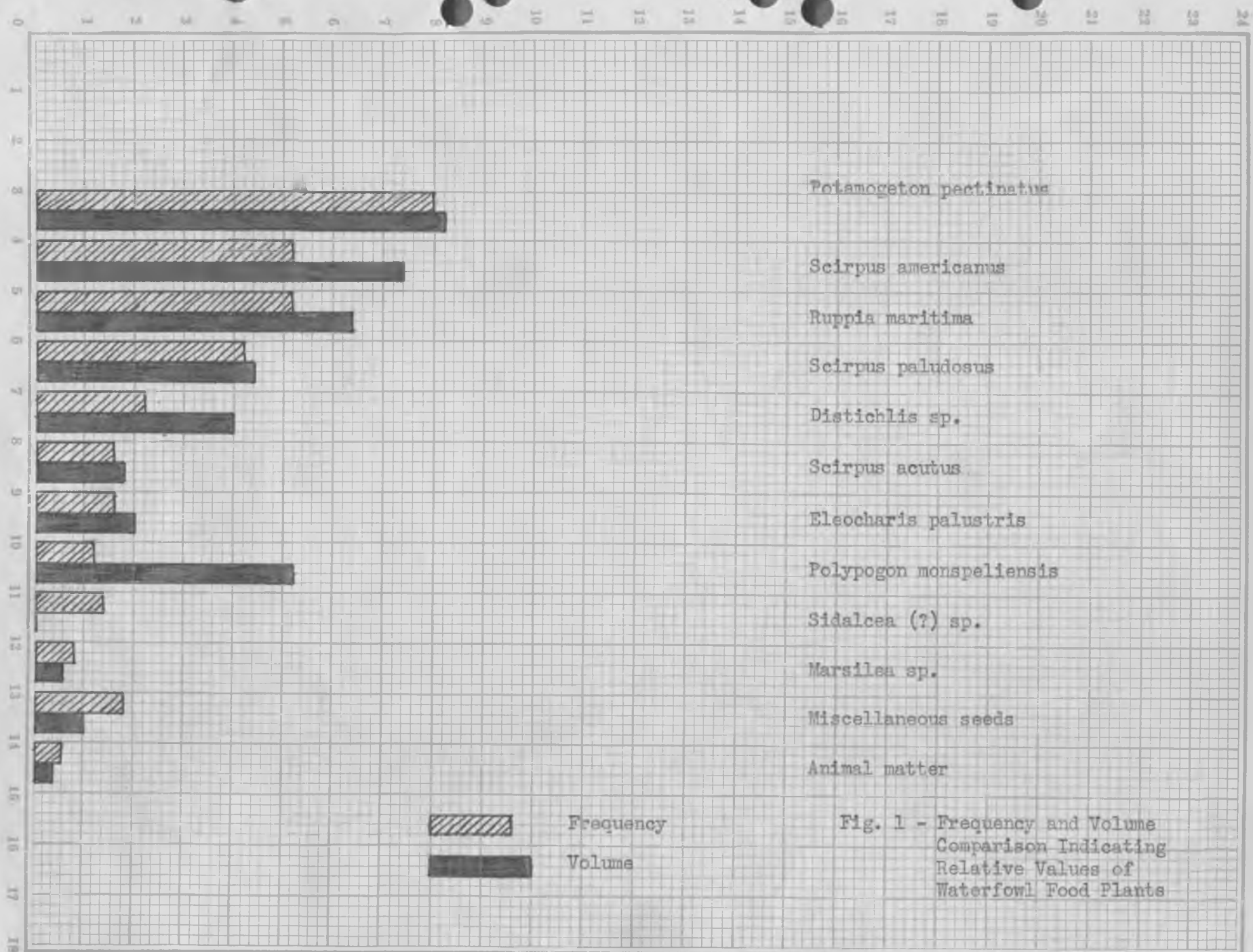


Fig. 1 - Frequency and Volume Comparison Indicating Relative Values of Waterfowl Food Plants

We were very much surprised that nutgrass was not more heavily utilized. There are more than 1,000 acres of this plant in the marsh, and the large seeds were available in tremendous quantities. Perhaps it is more important as a spring food item.

In the previous narrative report we mentioned that rising water in the marsh during the early part of the hunting season resulted in a movement of mallards from the nutgrass area to the inundated saltgrass borders. This change was reflected in the food habits and saltgrass became a common inclusion in the mallard diet.

Hardstem bulrush seed also was not consumed in proportion to its abundance. Perhaps the fact that the plant normally grows in deeper water accounts for its lack of heavy use.

Rabbit foot grass occurs commonly in the saltgrass border. It became available when this zone was flooded.

Inclusion of animal material were uncommon. The bulk of these were dragonfly larvae, though a number of other aquatic forms including water boatmen and small crustacea (Gammarus) were represented.

We hope eventually to complete our reference collection of seeds and other food materials, and, as time and opportunity will allow, continue the food habits studies. We feel that this work is especially pertinent in pointing the way toward future management.

VI PUBLIC RELATIONS

A. Recreational Uses

Skating, estimated at 25 man days, on the Stillwater Point Reservoir in the vicinity of the service building was the only recreational use made of the Area during this period.

B. Refuge Visitors

The following visitors were received in Fallon during the report period:

- January 4 - Noel Cagle delivered the R-5 Caterpillar and left some barley that was later taken on to Desert Game Range.
- January 9 - Tom Tralease, Frank Groves and Nils Nilsson all of the State Fish and Game Commission spent the day going over the development program and on an inspection tour of the Area.
- January 27
28 Ross Hanson spent these two days in Fallon on the aerial census, and due to bad weather conditions remained for the second day.

- February 1 - Elmo See, Robert B cone and Nils Nilsson spent these days on the Stillwater Area and in the vicinity thereof to 6 making an audit of the State-Service contributions toward our cooperative work program.
- February 3 - William Taylor, Central Office, and Harry Willis, of the Regional Office spent this time conferring on marsh management.
- February 8 - Mr. Jacoby arrived and spent this week doing the to 15 necessary engineering work on the Stillwater Wildlife Management Area.
- February 24 - Mr. R. O. Gustafson of the Central Office spent 3 hours inspecting equipment on the Area in the company of Malcolm Allison of Reno.
- February 27 - Ross Hanson was in with the airplane to make an aerial waterfowl census.
- March 3 - Harry B. Richards, TCID Watermaster, was in discussing refuge management and water conditions.
- March 4 - Mr. MacDonald and Messrs. Lundy and Salter of the Idaho Fish and Game Department stopped in at the Stillwater Area on their way to the Wildlife Conference in San Francisco and made an inspection tour of the Area.
- March 11 - David A. Munro, Wildlife Management Officer, Wildlife Division, Dept. of Resources and Development, Canada accompanied by Vernon Ekedahl spent 4 hours inspecting the Stillwater Wildlife Management Area.
- March 14 - Frank Groves, Nils Nilsson, Fred Wright and Dan Evans all of the State Fish and Game Commission and Harry Richards, TCID Watermaster, spent 3 hours conferring on refuge management and planning.
- March 20 - Mr. MacDonald spent the morning in Fallon delivering surplus property and conferring on the work program.
- March 21 - 30 Mr. Jacoby spent this time tying in the points of diversion for the water right filings.
- March 21 - Messrs. Jenkins and Albright, P&H representatives, spent 2 hours on the Refuge looking over our equipment.
- March 23 - Ross Hanson accompanied by James Hiller, California State Warden came and made an aerial census with his airplane accompanied by LeRoy Giles.

- April 3 - Mr. S. S. Wheeler and Robert McDonald, Assistant Attorney General, spent 2 hours conferring on the recently made water right filings.
- April 6 - Wayne M. Bannon, Pend Oreille, called for the Chev. dump truck I-16106.
- April 4-10 - Leonard Springer and Robert Boone, Regional Office, spent 2 days on an investigation of the Area and conferring on project planning.
- April 14 - George L. Ducret, Cadastral Engineer, and Robert S. DeCaro, Survey Aide, Regional Office, arrived to spend some time surveying the boundary of the Refuge.
- April 18 - I. H. Kent, Albert Hicks and Son, spent 4 hours in office relative to pasture leases.
- April 21 - Carl Flocher, Wayne Wightman, Barney Fritz, Graziers, spent 3 hours in office regarding permits.
- April 24 - Ross Hanson was in with airplane to make census of
to cattle and horses grazing on the Stillwater Wildlife
25 Management Area. Also to make waterfowl census.
- April 25 - Howard Wolf, spent one hour conferring on a grazing permit. Mr. Wise and Wendel Wheat of Nevada Concrete Pipe Co., were in relative to concrete pipe bid - spent an hour.
- April 28 - Phil Hibel, TCID Supt., was in the office conferring on the Harmon Diversion and also the Dalton Tract.

C. Refuge Participation

The following meetings were attended through the report period.

- January 9 - "Haunts of the Hunted" and "Niobrara Refuge" was shown to the County Game Management Board. Part of this meeting was a gripe session to clear up complaints relative to development program on Refuge. 40 Present.
- January 12 - Film "Haunts for the Hunted" and "Niobrara Refuge" were shown to the seventh and eighth grades at the Oats Park School - about 75 students.
- January 14 - Attended Carson County Sportsmen Club as guest of Earl Branson, Ormsby County Commissioner. Film "Haunts of the Hunted" and "Niobrara Refuge" was shown to approximately 115 people.

- February 10 - Entertained Boy Scout Donald Draper as part of observation of National Boy Scout Week.
- March 8 - 16 Films "How and Why of Bird Banding" and "Bear River Refuge" were shown to the students of Fallon and Stillwater schools - 878 students.
- March 17-24 - Films "Shell Fishing" and "Western Grebe" were shown to the Fallon and Stillwater Schools - 875 students.
- March 31 to April 4 - Film "King Chinook" was shown to the students of the Fallon and Stillwater Schools - 850 students.
- April 2 - Film "Haunts of the Hunted" was shown to attendance of about 45 at the Seventh Day Adventist Church.
- April 3 - Attended Board meeting of the Truckee-Carson Irrigation District, in company with Nils Nilsson, S. S. Wheeler, Robert McDonald and Dan Evans.
- April 11 - Films "Woody Island" and "Duck Sickness" were shown to all the Fallon Schools and at the Seventh Adventist Church - attendance 840 people.
- April 17 - Attended TCID Board meeting and presented development program upon which approval was given by Board.
- April 20 - A meeting was held with livestock operators to inform them of our intentions to start billing graziers for forage under our grazing program. Attendance at the meeting was approximately 50. Considerable comment was made relative to grazing rates that may be established and some complaint of any charges for forage was heard. After the Service's part of the meeting livestock operators in an informal organization elected an advisory committee to work with the Service in a consulting and advisory capacity only. The committee that was appointed was advised that they had no legal status as far as the Service was concerned and that if they turned into a pressure group, that relationship with the committee would be terminated. It should be pointed out that the formulation of this committee was strictly action taken by the livestock operators and that no Service personnel had anything to do with it.
- April 24 - The film "Lower Souris" was shown to the Seventh Day Adventist Church, West End School and the High School - attendance 400.

E. Fishing

Bullhead and catfish fishing started about April 15. No large catches were reported and some fishermen drew blanks.

An estimated 500 man days of fishing through the period produced approximately 2,250 bullheads and 250 catfish from the Stillwater marsh. Bullheads run from 6 to 10 inches and catfish from 1/2 to 6 pounds.

From the Indian Lakes area, an estimated 300 large mouth black bass have been taken, the largest of which was a little over 6 pounds. A number of bass around 4 pounds have been reported. Fishing pressure was estimated at 250 man days.

Parch and bluegills present in the Indian Lakes have, to date, added nothing to the fisherman's catch.

F. Violations

Occasionally from the start of the project, gasoline would be siphoned out of some piece of equipment. A few miscellaneous items including crescent wrenches, pliers, a set of drills and a first aid kit were stolen off machines in the field. A constant watch was started before Christmas and continued on until January 1st. No one was observed and no losses occurred.

An all out effort was made through the first week in January to stop these losses. All crew members were alerted, various traps were prepared. On January 8th, we had our first good break, on the morning of January 9th, we called in the FBI and a sheriff's deputy and by 4:00 p.m., on the 9th had most of the stolen equipment back and the thief in jail. A subsequent trial in Federal Court in Las Vegas, Nevada, found the thief guilty, levied a fine of \$150.00 and gave him a years' probational period. All pilferage has completely stopped.

VII OTHER ITEMS

David B. Marshall entered on duty as Refuge Manager on March 23, 1950.

The present field crew consists of the following on April 30:

Service Crew

- 1 - Tractor Operator
- 1 - Oiler
- 2 - Laborers
- 2 - Truck Drivers

State Crew

- 1 - Construction Foreman
- 1 - Concrete Foreman

Composition credit for this report is:

LeRoy W. Giles - Sections, IA, II A, D; III B, C, D,, V A

David B. Marshall - Sections, I A-1, II A-2, B, E; IV A

Earl W. Nygren - Sections I B, C.

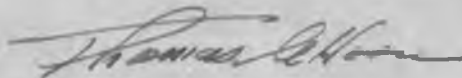
Illa E. Cress - Sections, VI B, C.

Thomas C. Horn - Sections, II F; III A; V E, F,, VI A; VII A, B, C

The following NR forms are not applicable to this Area through this report period:

- NR 3 - Big Game
- 5 - Disease
- 6 - Fish
- 7 - Plantings
- 8 - Cultivating Crops
- 8A- Grain Report
- 9 - Collections and Receipts
- 10 - Haying and Grazing
- 11 - Timber Removal

Submitted May 10, 1950



Thomas C. Horn
Refuge Manager

REFUGE Stillwater W. H. 4201

W A T E R F O W L

MONTHS OF January 1 to April 30, 19 50

(1) Species	(2) First Migrants Seen		(3) Peak Concentration		(4) Last Migrants Seen		(5) Young Produced		(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Broods Seen	Estimated Total	Estimated for Period
1. <u>Swans:</u>									
Whistling swan			2,000	2/17/50	2	3/28/50			2,000
2. <u>Geese:</u>									
Canada goose			2,029	1/11/50	50	3/10/50			2,100
Cackling goose			6	1/11/50	5	3/10/50			6
Brant									
White-fronted goose	1	2/22/50	4	4/18/50	4	4/18/50			5
Snow goose	4	2/13/50	3,000	3/10/50	1	3/27/50			3,000
Blue goose									
3. <u>Ducks:</u>									
Mallard	1,000	2/17/50	1,700	3/10/50	400	3/17/50			2,000
Black Duck									
Gadwall	450	2/17/50	900	4/10/50					1,000
Baldpate	200	2/17/50	1,000	3/10/50	150				1,000
Pintail	7,300	2/17/50	17,500	2/27/50	100	4/18/50			20,000
Green-winged teal	490	2/17/50	3,000	3/10/50	1,000	4/18/50			4,000
Blue-winged teal									
Cinnamon teal	4	2/8/50	400	3/10/50	25	4/18/50			500
Shoveller	25	2/27/50	900	4/25/50					1,000
Wood duck									
Redhead	25	2/27/50	400	4/25/50					500
Ring-necked duck									
Canvas-back	75	2/17/50	250	2/27/50					300
Scaup	90	3/17/50	150	4/3/50					150
Golden-eye	50	3/17/50	80	3/24/50	80	3/24/50			100
Buffle-head	25	3/10/50	50	3/10/50					50
Ruddy duck	175	3/3/50	3,000	3/24/50					3,000
									3,500
4. <u>Coot:</u>	175	3/10/50	3,500	4/3/50					

Form NR-1

3-1750

(June 1949)

(over)

SUMMARIES

Total Production:

Geese _____

Ducks _____

Coots _____

Total waterfowl usage during period 44,211

Peak waterfowl numbers 23,156

Areas used by concentrations Big Water

Principal nesting areas this season _____

Reported by Giles and Marshall

INSTRUCTIONS

- (1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance.
- (2) First Seen: The first refuge record for the species during the season concerned in the reporting period, and the number seen. This column does not apply to resident species.
- (3) Peak Concentration: The greatest number of the species present in a limited interval of time.
- (4) Last Seen: The last refuge record for the species during the season concerned in the reporting period.
- (5) Young Produced: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.
- (6) Total: Estimated total number of the species using the refuge during the period. This figure may or may not be more than that used for peak concentrations, depending upon the nature of the migrational movement.

Note: Only columns applicable to the reporting period should be used. It is desirable that the Summaries receive careful attention since these data are necessarily based on an analysis of the rest of the form.

3-1751
Form NR-1A
(Nov. 1945)

MIGRATORY BIRDS
(other than waterfowl)

Refuge Stillwater N. M. Area

Months of January 1 to April 30 1945

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. Water and Marsh Birds:										
Barred Grebe			1							
Western Grebe	1	3/12/50	16	4/18/50						30
Pied-billed Grebe			50							50
White Pelican	60	3/10/50	1,018	4/18/50						1,500
Parallon Cormorant	1	3/10/50	61	4/18/50						100
Great Blue Heron			300	4/29/50			1	80	300	600
American Egret	3	4/8/50	6	4/29/50			1	3	eggs only	6
Snowy Egret	49	4/8/50	180	4/29/50			1	90	eggs only	180
Bl. Crowned night heron	10	3/24/50	1,200	4/29/50			1	600	1,800	3,000
American bittern			6	3/28/50						50
White-faced Gl. Ibis	1	4/6/50	50	4/12/50				1	4 eggs	50
American Marshwren			1,500	2/17/50	500	3/24/50				1,500
Virginia Rail			400							400
Sora Rail			100							100
II. Shorebirds, Gulls and Terns:										
Black-bellied plover	28	4/10/50	28	4/10/50						28
Killdeer			25							25
Wilson Snipe	1	3/29/50	1	3/29/50						1
Greater Yellow-legs	2	3/16/50	30	4/24/50						50
Least Sandpiper	10	4/15/50	50	4/24/50						50
Dowitcher	2	2/4/50	20	4/23/50						20
Western Sandpiper	25	4/16/50	150	4/24/50						150
Marbled godwit	2	4/10/50	20	4/24/50						20
Avocet	3	2/26/50	200	3/24/50						200
Black-necked stilt	1	4/3/50	25	4/10/50						25
Wilson phalarope	30	4/27/50	30	4/27/50						30
Ring-billed gull	25	2/16/50	300	2/17/50						300
California Gull	24	4/18/50	24	4/18/50						50
Caspian tern	29	4/18/50	29	4/18/50						29

(over)

(over)

(1)	(2)	(3)	(4)	(5)	(6)
III. <u>Doves and Pigeons</u> :					
Mourning dove		100			100
White-winged dove					
IV. <u>Predaceous Birds</u> :					
Golden eagle					
Duck hawk					
Horned owl					
Magpie		25			25
Raven					
Crow		10			10
Bald eagle		15	2/7/50		15
Reported by.....					

INSTRUCTIONS

- (1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiformes)
 II. Shorebirds, Gulls and Terns (Charadriiformes)
 III. Doves and Pigeons (Columbiformes)
 IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)
- (2) First Seen: The first refuge record for the species for the season concerned.
- (3) Peak Numbers: The greatest number of the species present in a limited interval of time.
- (4) Last Seen: The last refuge record for the species during the season concerned.
- (5) Production: Estimated number of young produced based on observations and actual counts.
- (6) Total: Estimated total number of the species using the refuge during the period concerned.

3-1752

Form NR-2

(April 1946)

UPLAND GAME BIRDS

1613

Refuge Stillwater W. M. AreaMonths of January to April, 1945

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'd.	Estimated Total	Percentage	Hunting	For Re- stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Ring-necked Pheasant									8	Intermittent use of Area
Valley Quail									30	Intermittent use of Area

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

- (1) SPECIES: Use correct common name.
- (2) DENSITY: Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.
- (3) YOUNG PRODUCED: Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.
- (4) SEX RATIO: This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.
- (5) REMOVALS: Indicate total number in each category removed during the report period.
- (6) TOTAL: Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.
- (7) REMARKS: Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

* Only columns applicable to the period covered should be used.

SMALL MAMMALS

Refuge Millington V. H. Area Year ending April 30, 1950

(1) Species	(2) Density		(3) Removals					(4) Disposition of Furs					(5) Total Popula- tion
Common Name	Cover Types & Total Acreage of Habitat	Acres Per Animal	Hunting	Fur Harvest	Predator Control *	For Re- stocking	For Re- search	Share Trapping			Total Refuge Furs Shipped	Furs Donated	Furs Destroyed
			Permit Number	Trappers Share	Refuge share								
Bobcat	10,000	6.7											1,500
Coyote	150,000	10,000											15

List removals by Predator Animal Hunter

* List removals by Predator Animal Hunter

REMARKS:

Bobcat population figure is same as fall 1949 inventory, and does not include any increase for current year.

Reported by _____

INSTRUCTIONS

Form NR-4 - SMALL MAMMALS (Include data on all species of importance in the management program; i. e., muskrats, beaver, coon, mink, coyote. Data on small rodents may be omitted except for estimated total population of each species considered in control operations.)

- (1) SPECIES: Use correct common name. Example: Striped skunk, spotted skunk, short-tailed weasel, gray squirrel, fox squirrel, white-tailed jackrabbit, etc. (Accepted common names in current use are found in the "Field Book of North American Mammals" by H. E. Anthony and the "Manual of the Vertebrate Animals of the Northeastern United States" by David Starr Jordan.)
- (2) DENSITY: Applies particularly to those species considered in removal programs. Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottom land hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.
- (3) REMOVALS: Indicate the total number under each category removed since April 30 of the previous year, including any taken on the refuge by Service Predatory Animal Hunter. Also show any removals not falling under headings listed.
- (4) DISPOSITION OF FUR: On share-trapped furs list the permit number, trapper's share, and refuge share. Indicate the number of pelts shipped to market, including furs taken by Service personnel. Total number of pelts of each species destroyed because of unprime-ness or damaged condition, and furs donated to institutions or other agencies should be shown in the column provided.
- (5) TOTAL POPULATION: Estimated total population of each species reported on as of April 30.
- REMARKS: Indicate inventory method(s) used, size of sample area(s), introductions, and any other pertinent information not specifically requested.

REFUGE GRAIN REPORT

Refuge Stillwater Wildlife Management Area

Months of January thru April 194 50

(1) VARIETY	(2) ON HAND BEGINNING OF PERIOD	(3) RECEIVED DURING PERIOD	(4) TOTAL	(5) GRAIN DISPOSED OF				(6) ON HAND END OF PERIOD	(7) PROPOSED USE		
				TRANS- FERRED	SEEDED	FED	TOTAL		SEED	Bird Banding FEED	SURP.
Barley	-	4,160	4,160			50	50	4,110	4060	50	0
Through an oversight this is our first Refuge Grain Report and should be entered in the Narrative Report applicable.											

(8) Indicate shipping or collection points Fallon, Nevada

(9) Grain is stored at Stillwater Headquarters

(10) Remarks Transferred in from Tule Lake Refuge

NR-8a

REFUGE GRAIN REPORT

This report should cover all grain on hand, received, or disposed of, during the period covered by this narrative report.

Report all grain in bushels. For the purpose of this report the following approximate weights of grain shall be considered equivalent to a bushel: Corn (shelled)—55 lbs., Corn (ear)—70 lbs., Wheat—60 lbs., Barley—50 lbs., Rye—55 lbs., Oats—30 lbs., Soy Beans—60 lbs., Millet—50 lbs., Cowpeas—60 lbs., and Mixed—50 lbs. In computing volume of granaries, multiply the cubic contents (cu. ft.) by 0.8 bushels.

- (1) List each type of grain separately: Corn, wheat, proso millet, etc. Include only domestic grains; aquatic and other seeds will be listed on NR-9.
- (3) Report all grain received during period from all sources, such as transfer, share-cropping, or harvest from food patches.
- (4) A total of Columns 2 and 3.
- (6) Column 4 less Column 5.
- (7) This is a proposed breakdown by varieties of grain listed in Column 6.
- (8) Nearest railroad station for shipping and receiving.
- (9) Where stored on refuge: "Headquarters grainary", etc.
- (10) Indicate here the source of grain shipped in, destination of grain transferred, data on condition of grain, unusual uses proposed.



A load of 54 muskrats ready for release on the Stillwater Marsh.



A little restraint was necessary to get this fellow to pose for a closeup.



This picture not only shows two of the liberated muskrats; it also illustrates the extent of overgrazing, a typical feature of the Stillwater Marsh edge.



Photo No. 46 - East Canal. Backfilling around, and clearing earth from, footings after concrete had set in freezing weather. Check No. 3 in foreground; Canal turnout top left corner. 1/6/50



Photo No. 47 - HD-14, Allis Chalmers Dozer, Serial No. 995,
opening up a new pit for coarse aggregate. What
appears to be an unlimited supply of well graded
coarse aggregate is available here. This will be
mixed with pit run sand and gravel that is too
sandy for straight use. 1/6/50



Photo No. 48 - A heavy load on a downhill pull. 1/6/50



Photo 49. Exploring another prospect hole for coarse aggregate. 1/6/50



Photo No. 50 - Shirley Robison, Nevada State Fish & Game Warden, pouring plaster cast over tire track coupled with theft of gasoline and apparent attempted pilferage of service building. Photo taken in front of service building. 1/9/50



Photo No. 51 - Setup left at P&H Dragline by operating crew to assist in apprehending gasoline thief. ~~Prestona~~ can is set over fill cap on gas tank and may have finger prints. Ground in front of gas tank was swept to take impression of footprints and cans used by pilferer on prior occasions. Gas can and foot prints are shown in picture. 1/9/50



Photo No. 52 - Making plaster casts of gas cans that were used in pilferage of gasoline from P&H. By centralizing a flow of information from crew members to the Refuge Manager, two coincidences that occurred between Sunday evening and Monday at 10:00 a.m. resulted in the apprehension of the thief and recovery of approximately \$100 worth of stolen tools. 1/9/50



Photo No. 53 - The contour crew on the East Pasture. The man with the rod leads off guided by the instrument man in the distance. The engineer in the jeep rounds off the sharp corners for the 22 Cat operator who plows the furrow in the jeep's tracks. Furrows mark the location of contour dikes for the irrigated pasture units. 2/9/50



Photo No. 54 - Drop and check structure No. 1, Lateral 294. This is the first of the lateral structures poured in the East Pasture. Workman is removing she-bolt pins. 4/24/50



Photo No. 55 - Looking across East Canal and downstream the length of Lateral 294. The structure in the distance is the upstream side of Check and Drop No. 1 in this Lateral. 4/24/50



Photo No. 56 - Looking downstream on Lateral 336 from across East Canal. The roadway on the west side is completed, (carryall and scraper), but center cut and east fill (right) remains to be completed by elevating grader and draglines.
4/24/50



Photo No. 57 - Photo of contour dikes taken from top of contour 96, Lateral 314.
This is a continuity of photos 32 and 33 which show various stages
of the pasture development. Effects of wind are noticeable in the
foreground. 4/25/50



Photo No. 58 - Oil house, complete except for painting trim. Used at present for seed storage. Only mouseproof building we have. 4/25/50



Photo M-61 - Cattail burning near Manha Landing. Fire set to open up marsh. 3/31/50



Photo M-65 - Marsh fires near Millan's Landing. This is part of our burning operation. 3/31/50



Photo M-67 - Burn was clean in hardstem bulrush near Millan's Landing.



Photo M-68 - Cattail did not burn as clean as the bulrush. 3/31/50



Photo M-71 - TCID Board members who made a tour of the Project, April 12, 1950.
Left to Right - Thomas C. Horn; Board member John Konda; Supt. Phil
Hiibel; Asst. County Ext. Agent Geo. Zappittini; Board Chairman Geo.
Miller; Bus Driver Ward Emery, Jr.; Board members Marvin Weishaupt,
John Thornton, and Mario Peraldo. 4/12/50



Photo M-72. Artesian well near mouth of Carson River. Wells of this type, in this area, not only supply livestock with water but make some waterfowl habitat as well. 4/1/50



Photo M-73 - Water tank supplied by artesian well at mouth of Carson River, one of the principle grazing spots on the Area. 4/15/50



Photo M-74 - Artesian well at Timber Lake. This is on a 520-acre tract leased to a private individual for grazing purposes before establishment of Stillwater Wildlife Management Area. 4/15/50



Photo M-77 - Nest and eggs of black-crowned night heron
in hardstem bulrush at heron rookery. 4/27/50



Photo M-78 - Eggs and young of black-crowned night heron.
4/27/50



Photo M-79 - Nest and eggs of black-crowned night heron. 4/27/50



Photo M-80 - Nest and eggs of snowy egret. Eggs smaller
than those of night heron. 4/27/50



Photo M-81 - Nest and eggs of blue heron in hardstem bulrush. Nesting material is hardstem bulrush and seepweed, Suaeda sp. 4/27/50



Photo M-82 - Young blue herons in nest. 4/27/50